

Alternative perspectives on MOOC success

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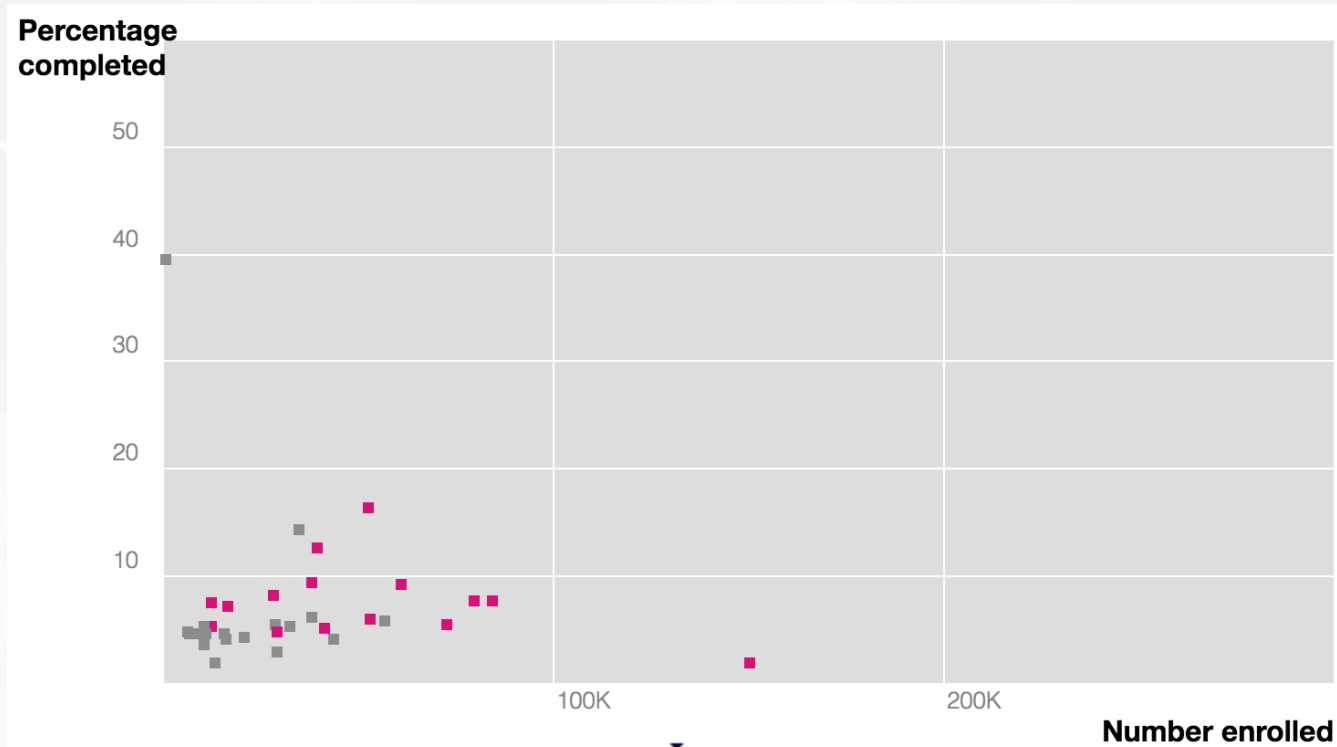
Overview

- The problem of high drop-out rates
- Non-formal learning with MOOCs: Personal curriculum
- Two levels of pursuing a personal curriculum
 - Planning to enroll in a number of MOOCs (level one)
 - Selecting appropriate MOOCs (transition)
 - Actual enrollment in particular MOOCs (level two)
- Intention and actual behavior in a particular MOOC: Identifying the MOOC taker
- Dynamics of acting out (intial) intentions when enrolled in a particular MOOC
- Conclusions
- Questions

The problem of high drop-out rates



The problem of high drop-out rates



<http://http://www.katyjordan.com/MOOCproject.html>

MOOC providers report high drop-out rates which on average range from

90 to 95%

The problem of high drop-out rates

Definition from F2F education

**MOOC provider
perspective**



Students who leave
education without an
end-qualification

**N students without
certificate / N enrolled
students = dropout**

We need alternative perspectives on MOOC success!



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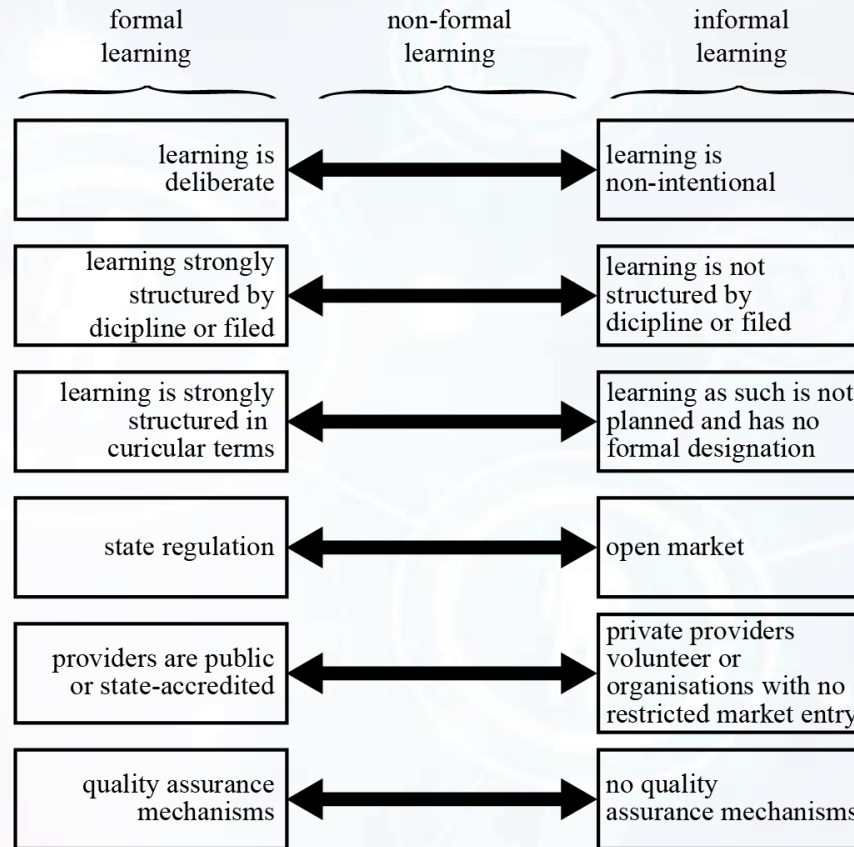


Recognizing MOOCs as non-formal learning

Non-formal learning with MOOCs: Personal curriculum

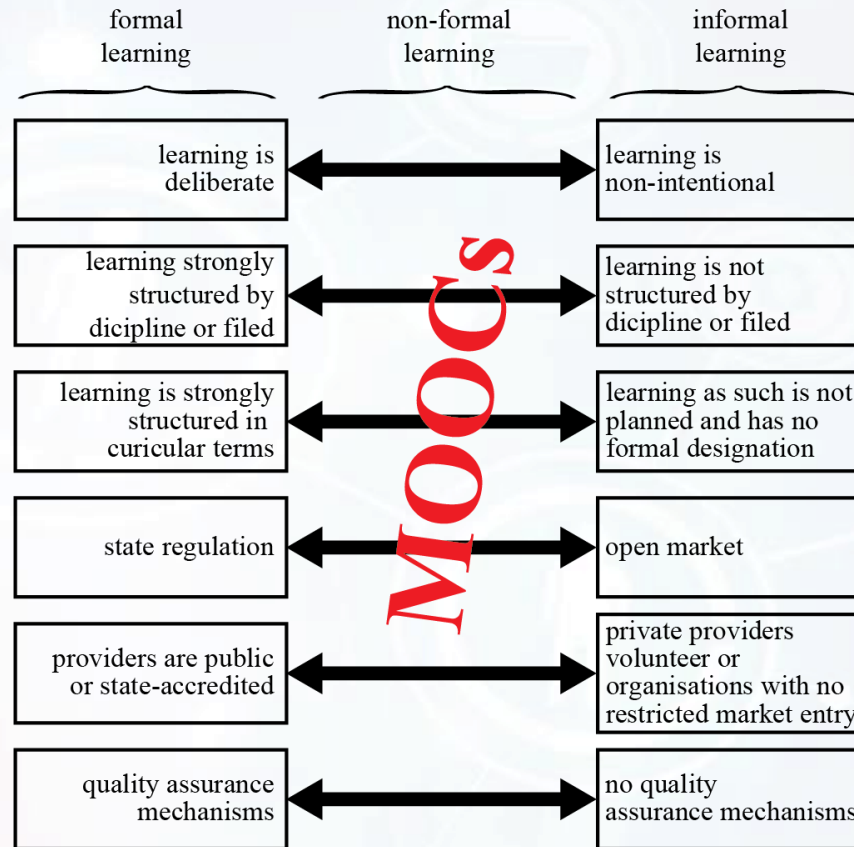
- The learning landscape
 - **Formal learning**: Formal learning is typically institutionally sponsored, classroom-based, and highly structured
 - **Informal learning**: Learning that happens incidental and as a consequence of being involved in daily activities; the opposite of formal learning.
 - **Non-formal learning**: Between formal and informal learning.

Non-formal learning with MOOCs: Personal curriculum



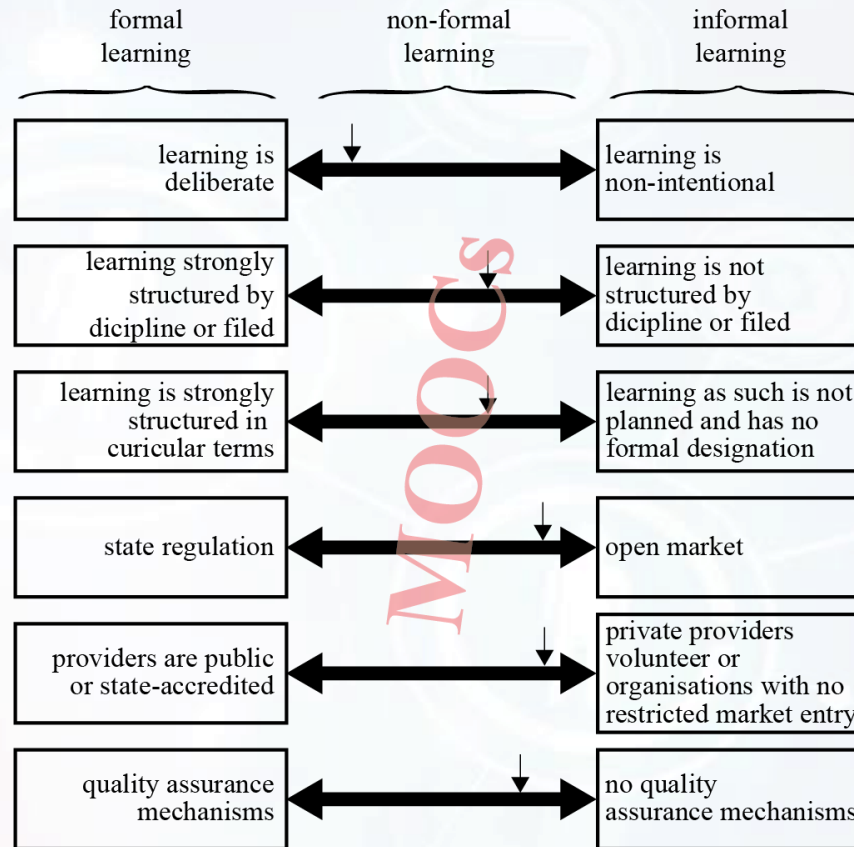
Werquin, P. (2010). Recognising non-formal and informal learning: Outcomes, policies and practices. OECD

Non-formal learning with MOOCs: Personal curriculum



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Non-formal learning with MOOCs: Personal curriculum



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MOOC takers have a personal curriculum

Why?

- Career benefits
 - Will allow me to find a new job
 - Will keep me updated in the field of my current job
 - Will allow me to get a promotion



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- Educational benefits
 - Will allow me to complete the prerequisites for an academic program
 - Will refresh key concepts within my field of study
 - Will help me to prepare for a standardized examination



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- Educational benefits
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 - Will refresh key concepts within my field of study
 - Will help me to prepare for a standardized examination
- Personal benefits
 - Will allow me to spend my spare time useful
 - Will raise my self-esteem
 - Will save me money



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Two levels of pursuing a personal curriculum

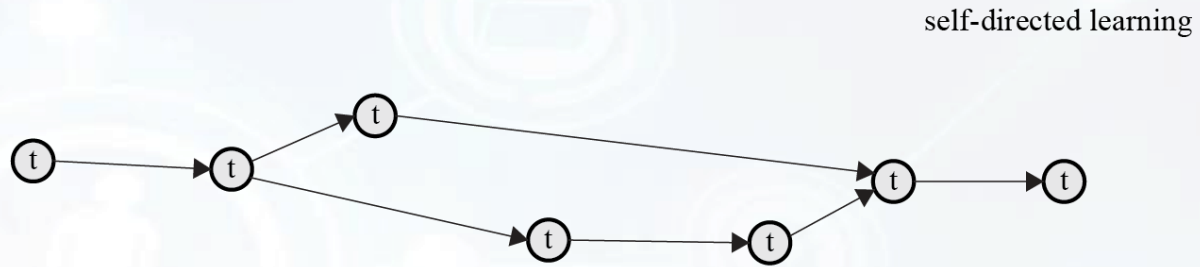


Ambition:
To upgrade yourself in
Electrical engineering

<http://wonderfulengineering.com/free-engineering-hd-wallpapers-for-download/>

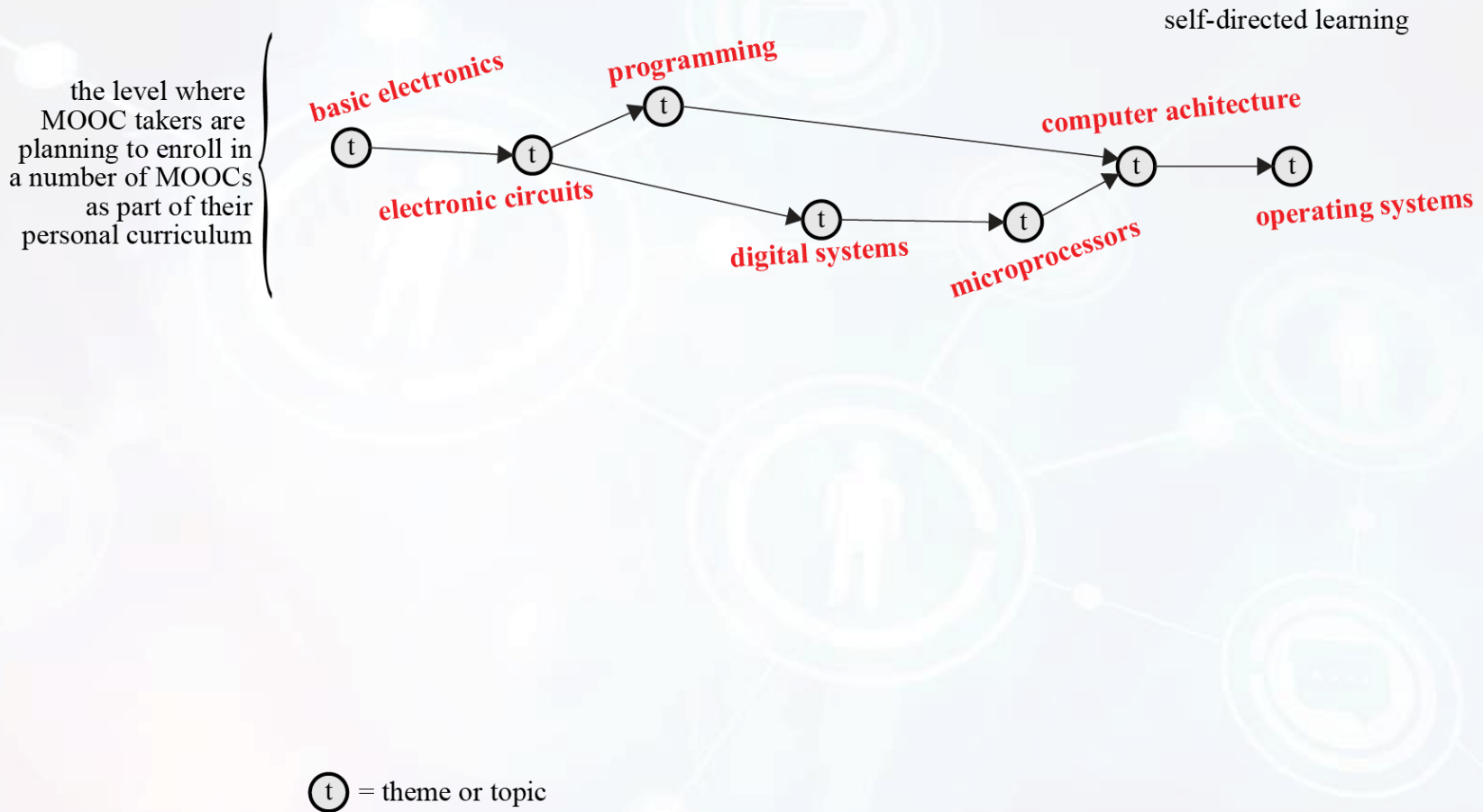
Planning to enroll in a number of MOOCs

the level where
MOOC takers are
planning to enroll in
a number of MOOCs
as part of their
personal curriculum

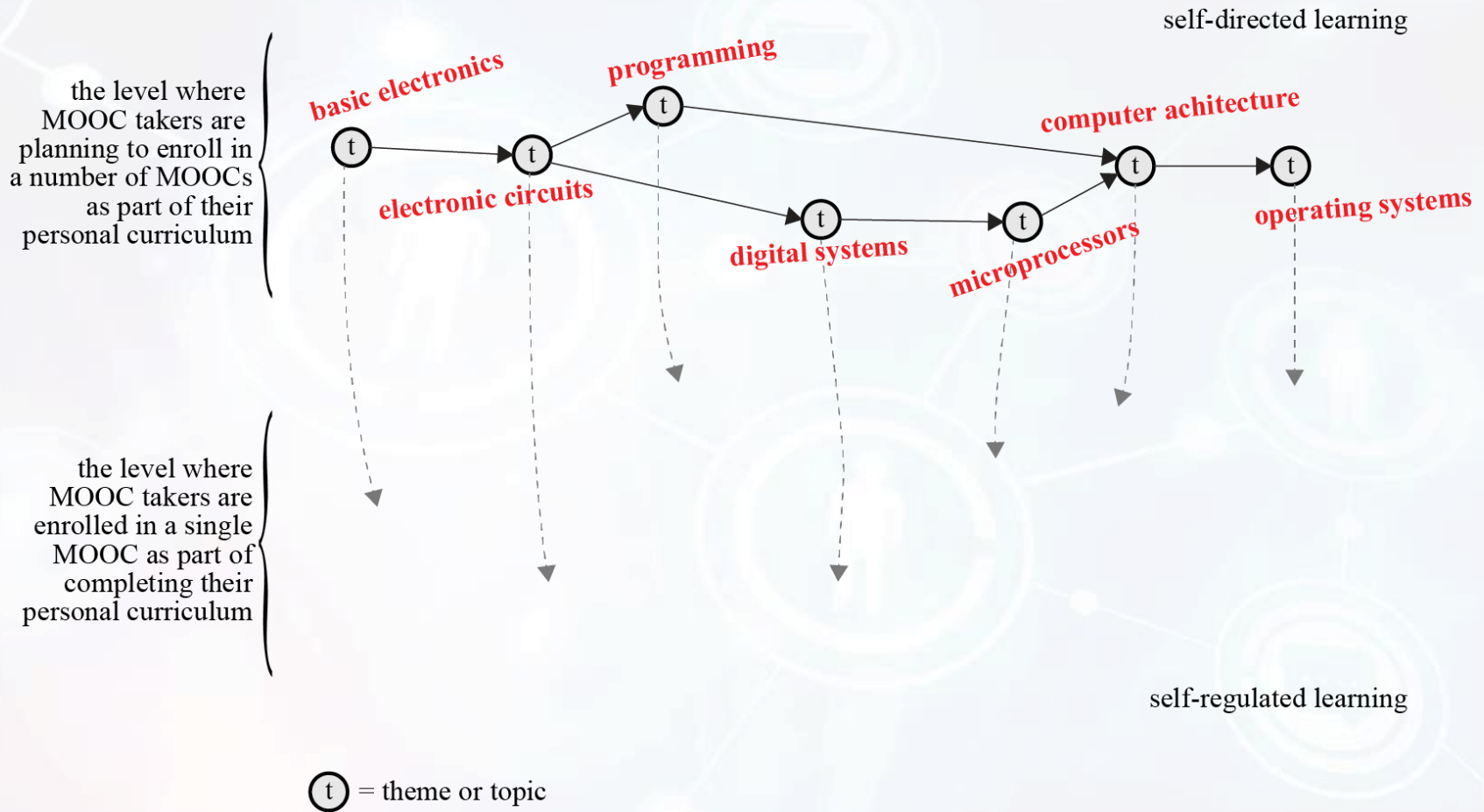


(t) = theme or topic










Planning to enroll in a number of MOOCs



Selecting appropriate MOOCs



Selecting appropriate MOOCs

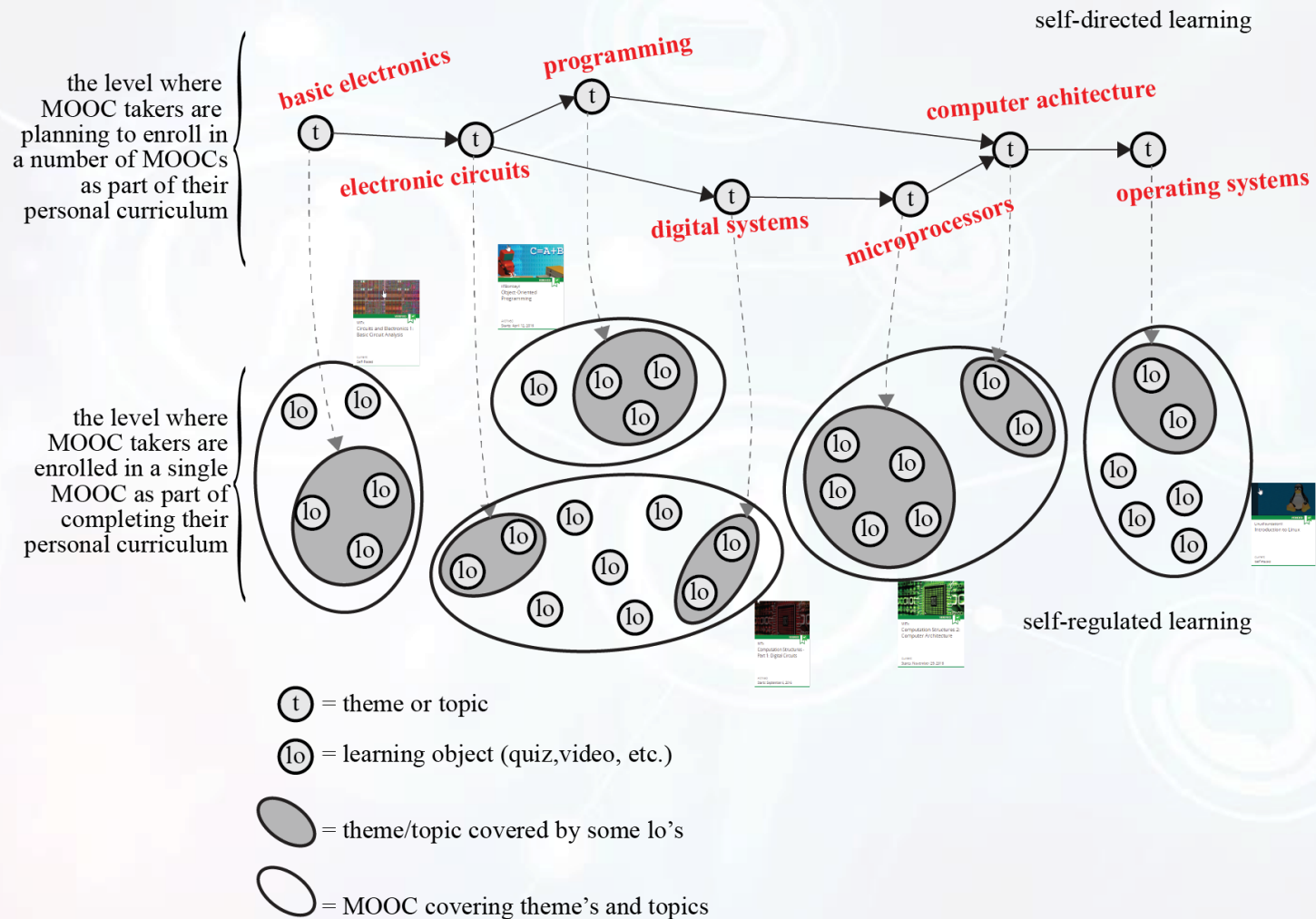
 <p>PurdueX Fundamentals of Nanoelectronics: Basic...</p> <p>Archived Starts: March 26, 2015</p>	 <p>PurdueX Fundamentals of Nanoelectronics, Part B...</p> <p>Archived Starts: October 8, 2015</p>	 <p>MITx Computation Structures 3: Computer Organization</p> <p>Upcoming Starts: February 28, 2017</p>
 <p>Microsoft Developing Dynamic Web Applications using Angul...</p> <p>Archived Starts: June 30, 2016</p>	 <p>IITBombayX Signals and Systems, Part 2</p> <p>Upcoming Starts: March 30, 2017</p>	 <p>EPFLx Electronique I</p> <p>Archived Starts: September 1, 2016</p>
 <p>PurdueX Introduction to Bioelectricity</p> <p>Archived Starts: August 24, 2015</p>	 <p>HKUSTx A System View of Communications: From...</p> <p>Current Starts: November 8, 2016</p>	 <p>RiceX Discrete Time Signals and Systems, Part 2...</p> <p>Archived Starts: March 18, 2015</p>

Ed-X

<p>COURSE 1</p> <h2>Introduction to Power Electronics</h2> <p>Upcoming session: Dec 26 – Jan 23.</p> <p>Commitment 3 weeks of study, 1-3 hours/week</p> <p>About the Course</p> <p>This course introduces the basic concepts of switched-mode converter circuits for controlling and converting electrical power with high efficiency. Principles of converter circuit analysis are introduced, and are developed for finding the steady state voltages, currents, and efficiency of power converters. Assignments include simulation of a dc-dc converter, analysis of an inverting dc-dc converter, and modeling and efficiency analysis of an electric vehicle system and of a USB power regulator.</p> <p>After completing this course, you will:</p> <ul style="list-style-type: none"> Understand what a switched-mode converter is and its basic operating principles Be able to solve for the steady state voltages and currents of step-down, step-up, inverting, and other power converters Know how to derive an averaged equivalent circuit model and solve for the converter efficiency <p>A basic understanding of electrical circuit analysis is an assumed prerequisite for this course.</p> <p>> More Details</p>	<p>COURSE 5</p> <h2>Magnetics for Power Electronic Converters</h2> <p>Upcoming session: Dec 19 – Jan 23.</p> <p>Commitment 4 weeks of study, 2-4 hours/week</p> <p>About the Course</p> <p>This course covers the analysis and design of magnetic components, including inductors and transformers, used in power electronic converters. The course starts with an introduction to physical principles behind inductors and transformers, including the concepts of inductance, core material saturation, angles and energy storage in inductors, reluctance and magnetic circuit modeling, transformer equivalent circuit, magnetizing and leakage inductance. Multi-winding transformer models are also developed, including inductance matrix representation, for series and parallel structures. Modeling of losses in magnetic components covers core and winding losses, including skin and proximity effects. Finally, a complete procedure is developed for design optimization of inductors in switched-mode power converters.</p> <p>After completing this course, you will:</p> <ul style="list-style-type: none"> Understand the fundamentals of magnetic components, including inductors and transformers Be able to analyze and model losses in magnetic components, and understand design trade-offs Know how to design and optimize inductors for switched-mode power converters <p>This course assumes ONLY prior completion of Introduction to Power Electronics and Converter Circuits.</p> <p>> More Details</p>
<p>COURSE 2</p> <h2>Converter Circuits</h2> <p>Upcoming session: Dec 19 – Jan 23.</p> <p>Commitment 4 weeks of study, 1-3 hours/week</p> <p>About the Course</p> <p>This course introduces more advanced concepts of switched-mode converter circuits. Realization of the power semiconductor in inverters or in converters having bidirectional power flow is explained. Power diodes, power MOSFETs, and IGBTs are explained, along with the origins of their switching times. Equivalent circuit models are refined to include the effects of switching loss. The discontinuous conduction mode is described and analyzed. A number of well-known converter circuit topologies are explored, including those with transformer isolation.</p> <p>The homework assignments include a boost converter and an H-bridge inverter used in a grid-interfaced solar inverter system, as well as transformer-isolated forward and flyback converters.</p> <p>After completing this course, you will:</p> <ul style="list-style-type: none"> Understand how to implement the power semiconductor devices in a switching converter Understand the origins of the discontinuous conduction mode and be able to solve converters operating in DCM Understand the basic dc-dc converter and dc-ac inverter circuits Understand how to implement transformer isolation in a dc-dc converter, including the popular forward and flyback converter topologies. <p>Completion of the first course Introduction to Power Electronics is the assumed prerequisite for this course.</p> <p>> More Details</p>	<p>COURSE 6</p> <h2>Capstone Design Project in Power Electronics</h2> <p>Upcoming session: Feb 6 – Mar 27.</p> <p>Commitment 6 weeks of study, 6-10 hours/week</p> <p>About the Capstone Project</p> <p>Learners will design a DC-DC converter that powers USB-C devices (20 V at 3 A) from a dc input voltage source such as a lithium ion battery pack or a desktop computer power bus. Aspects of the project will include:</p> <ul style="list-style-type: none"> Design of converter power stage and magnetics. Requires mastery of courses 1, 2, and 5. Simulation to verify correct steady-state operation. Requires mastery of courses 1, 2, and 4. Design of converter control system. Requires mastery of courses 3 and 4. Simulation to verify correct control system operation. Requires mastery of courses 3 and 4. Preparation of milestone reports documenting the design and its performance. <p>The reports will be peer graded.</p> <p>> More Details</p>

Coursera

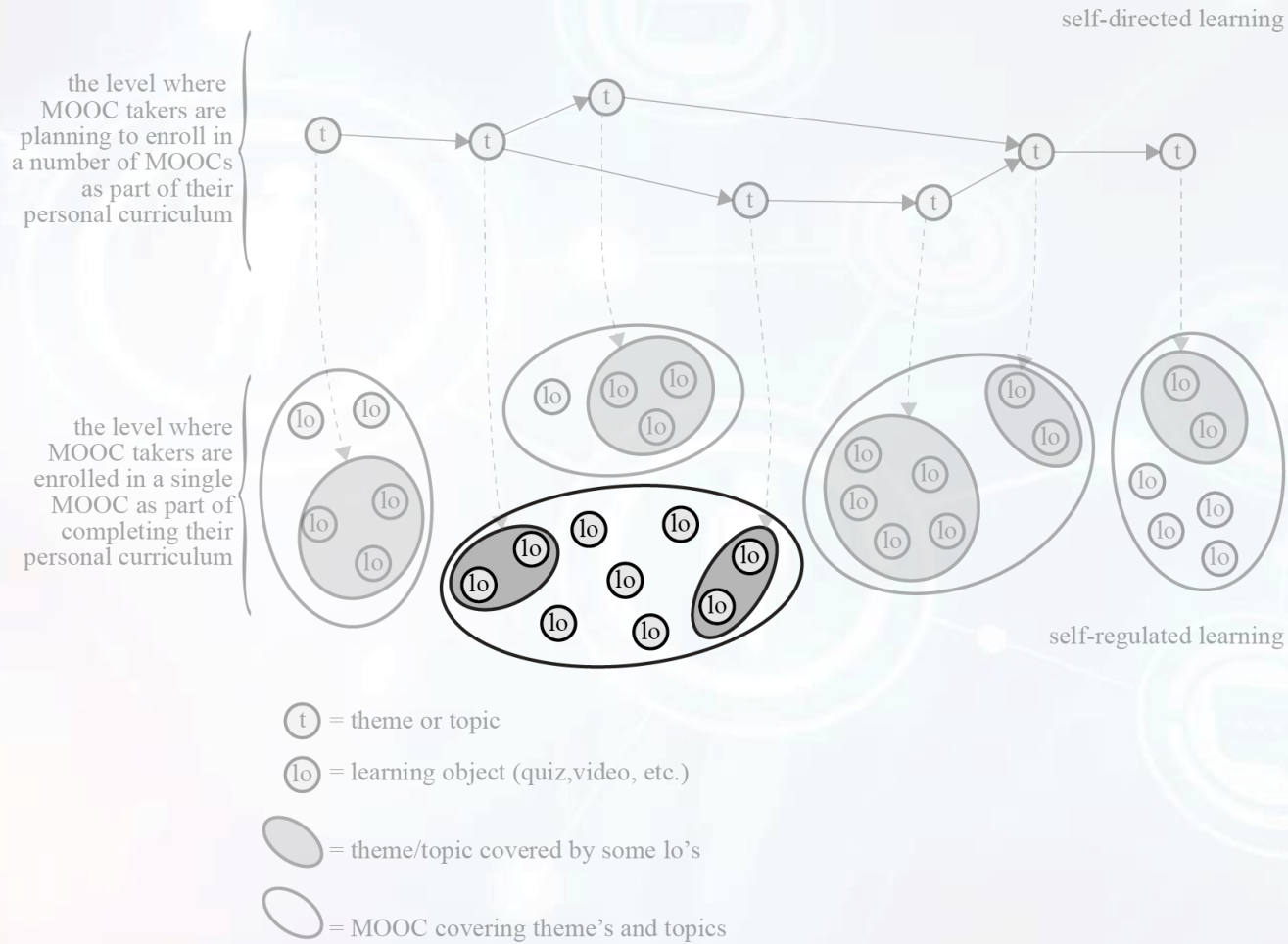
Actual enrollment in particular MOOCs



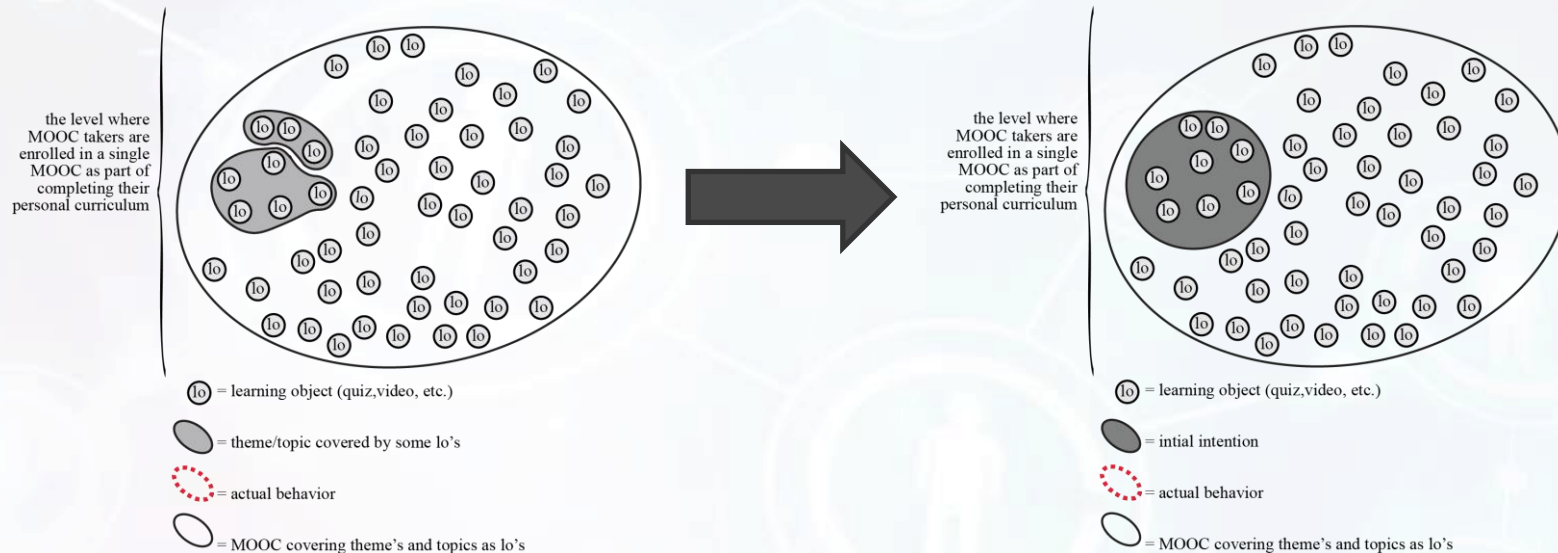


Intention and actual behavior in a particular MOOC: Identifying the MOOC taker

Identifying the MOOC taker

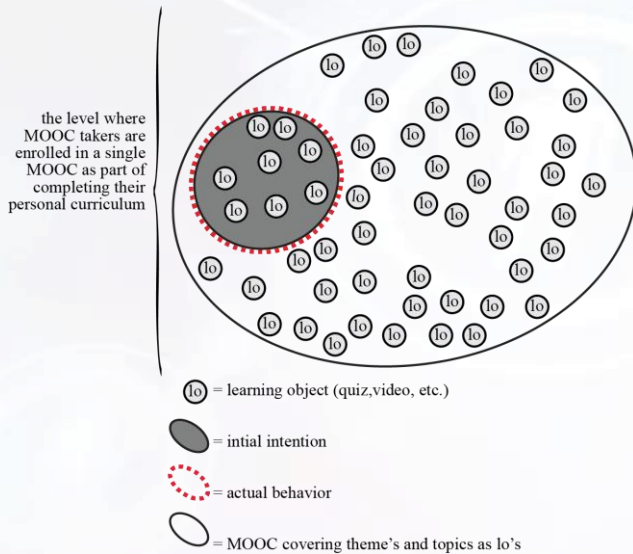


Identifying the MOOC taker



For simplicity reasons we focus on the learning objects (lo's)
in stead of focusing on the themes and topics

Identifying the MOOC taker

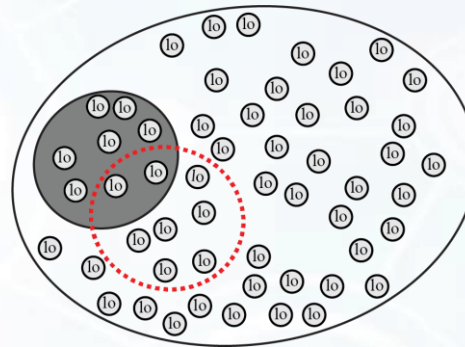
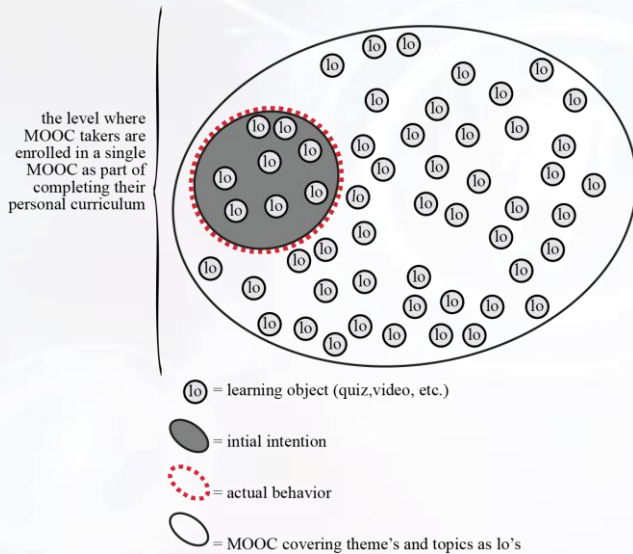


Exact as intended



inclined actor

Identifying the MOOC taker



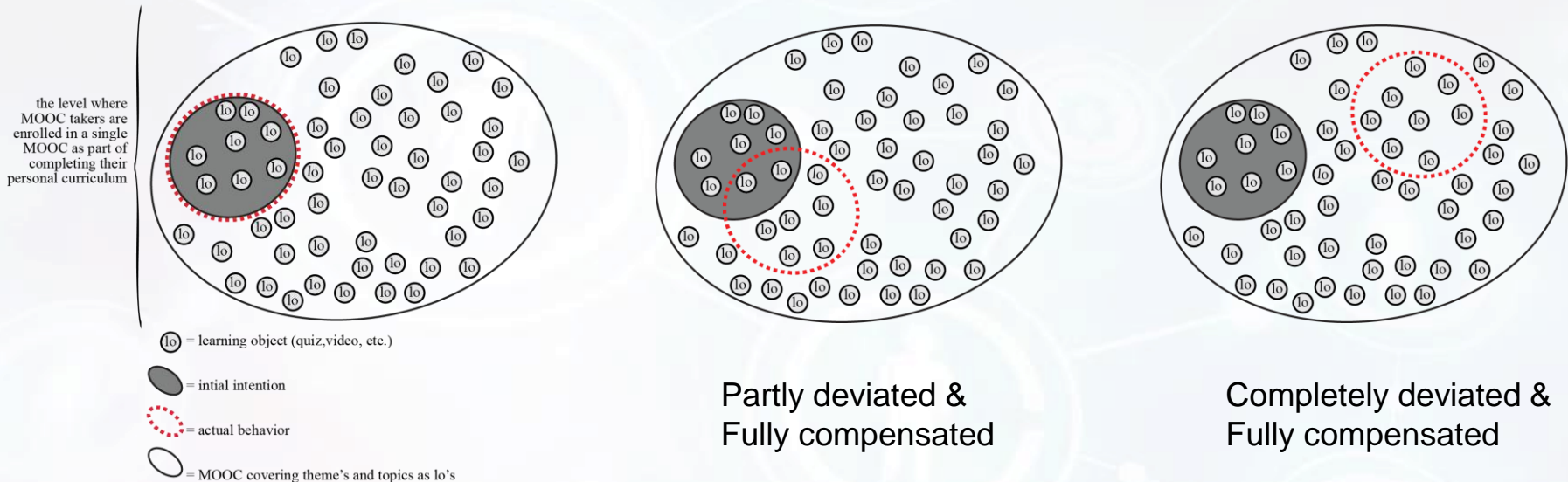
Partly deviated &
Fully compensated

Exact as intended



inclined actor

Identifying the MOOC taker

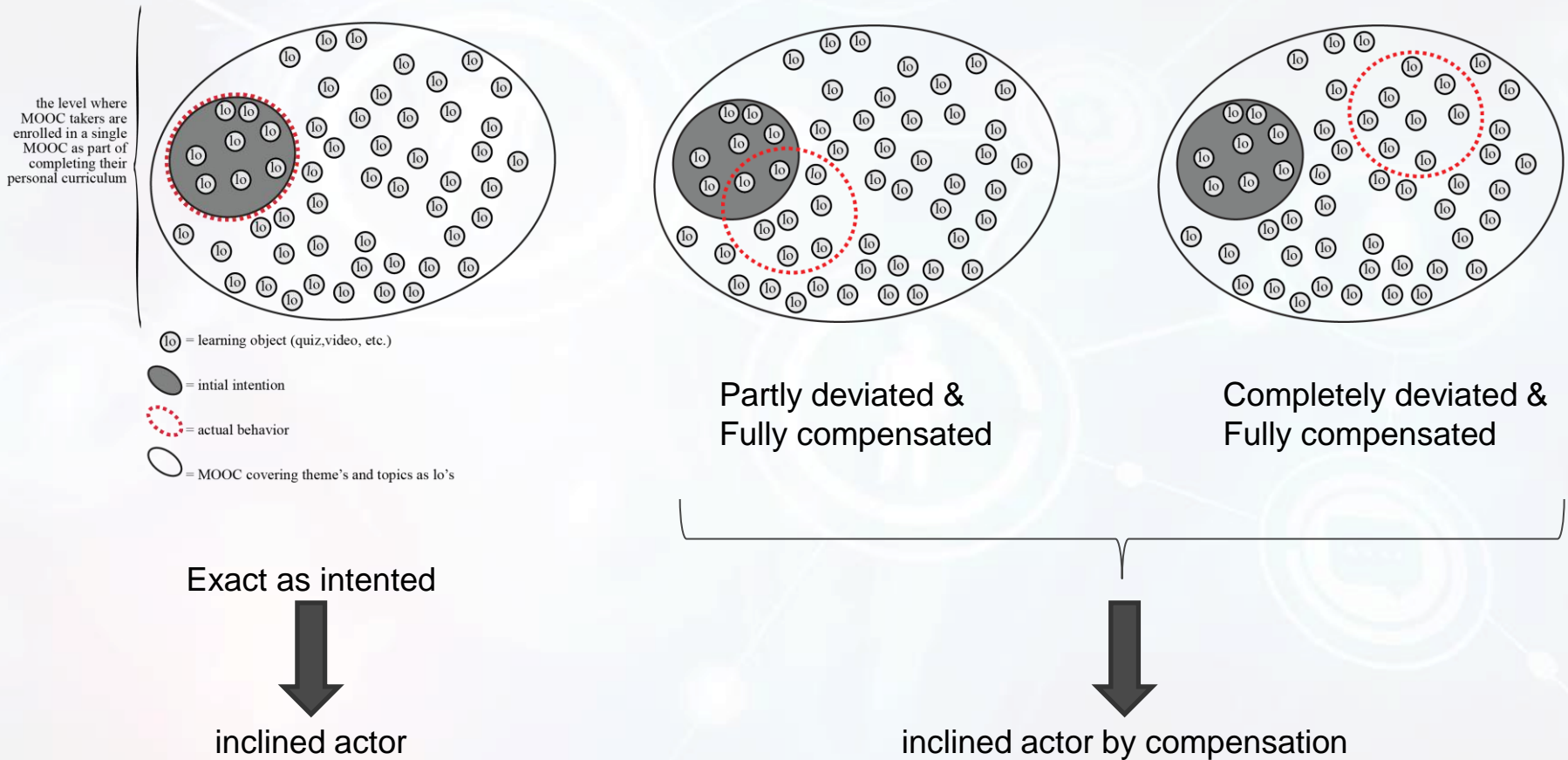


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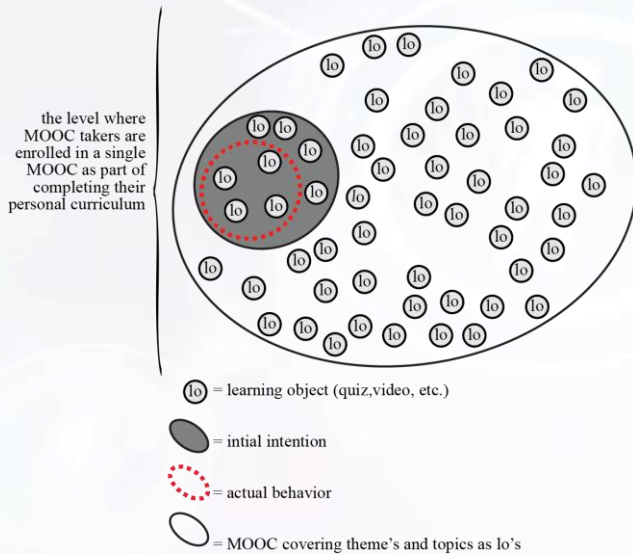


inclined actor

Identifying the MOOC taker



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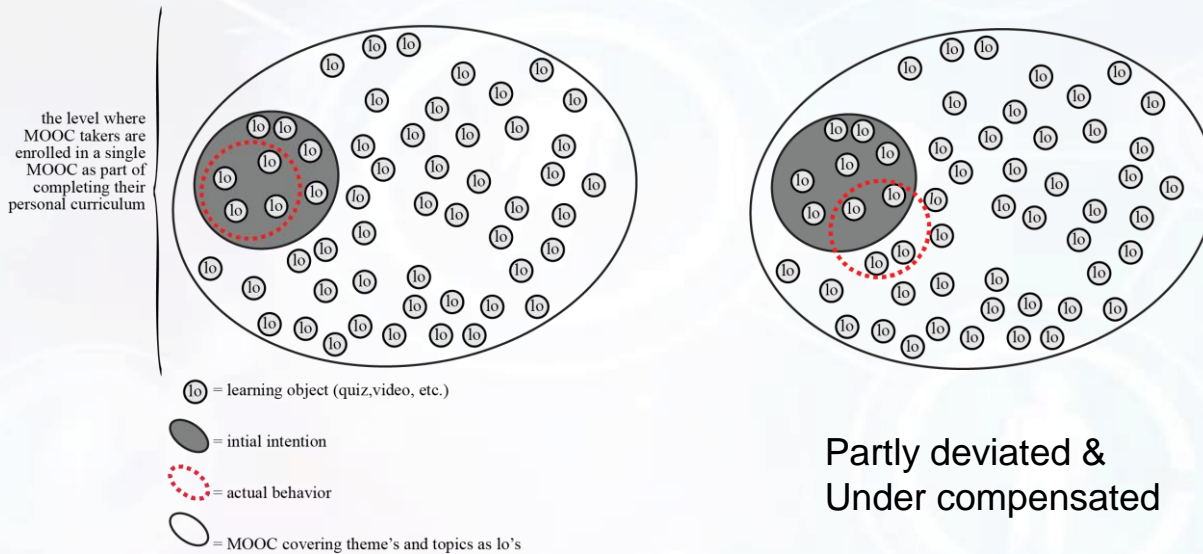


Less than intended



inclined abstainer

Identifying the MOOC taker

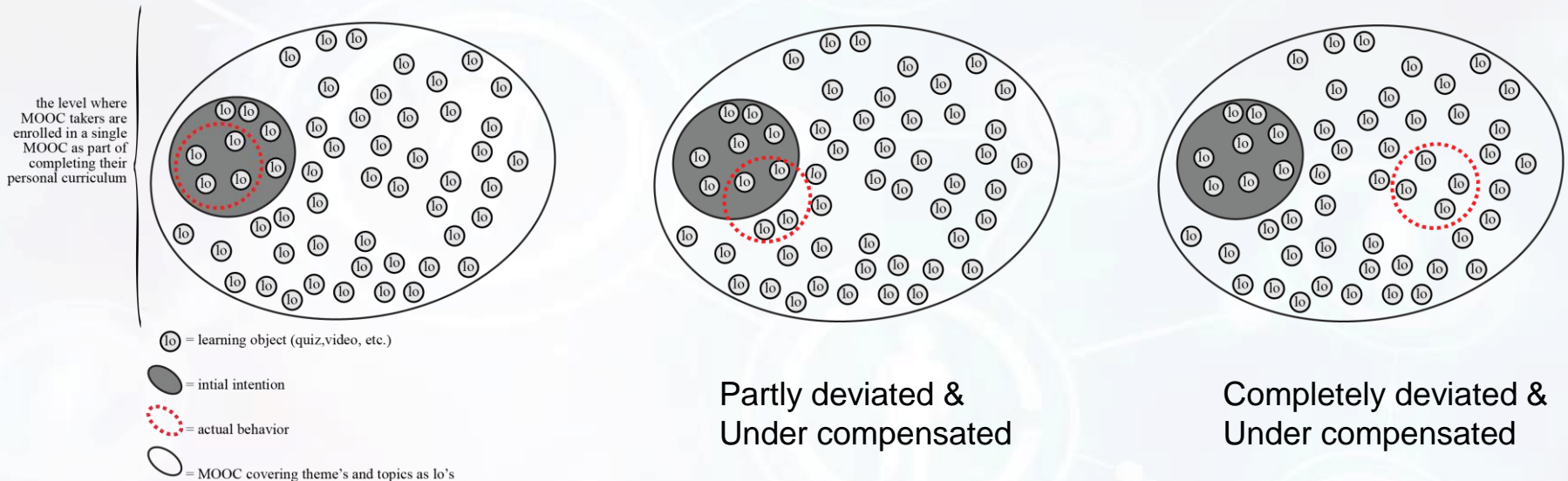


Less than intended



inclined abstainer

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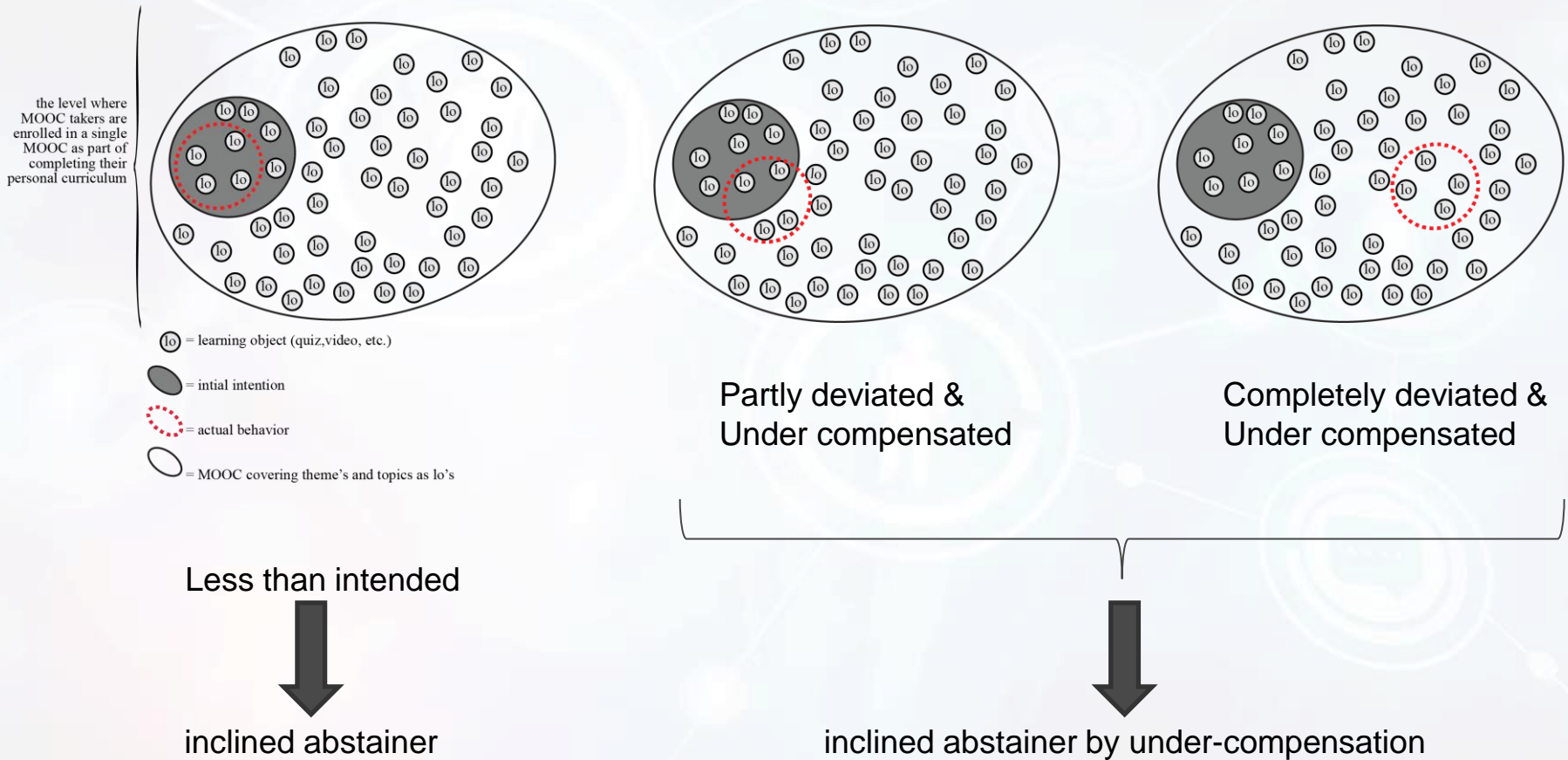


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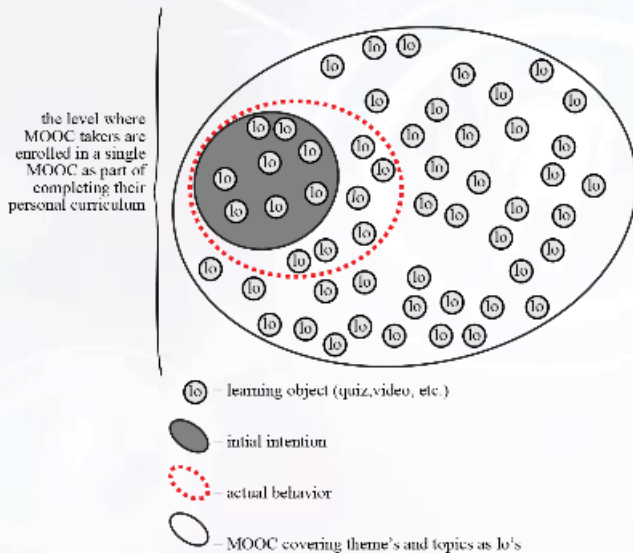


inclined abstainer

Identifying the MOOC taker



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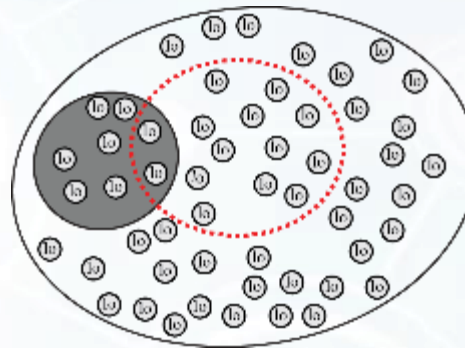
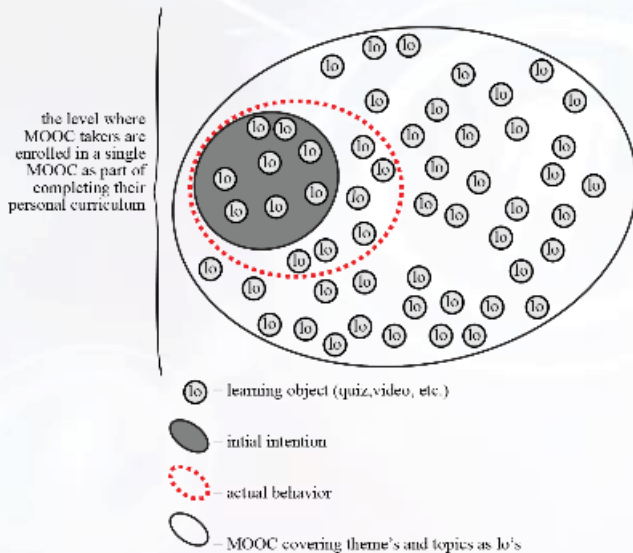


More than intended



disinclined actor

Identifying the MOOC taker



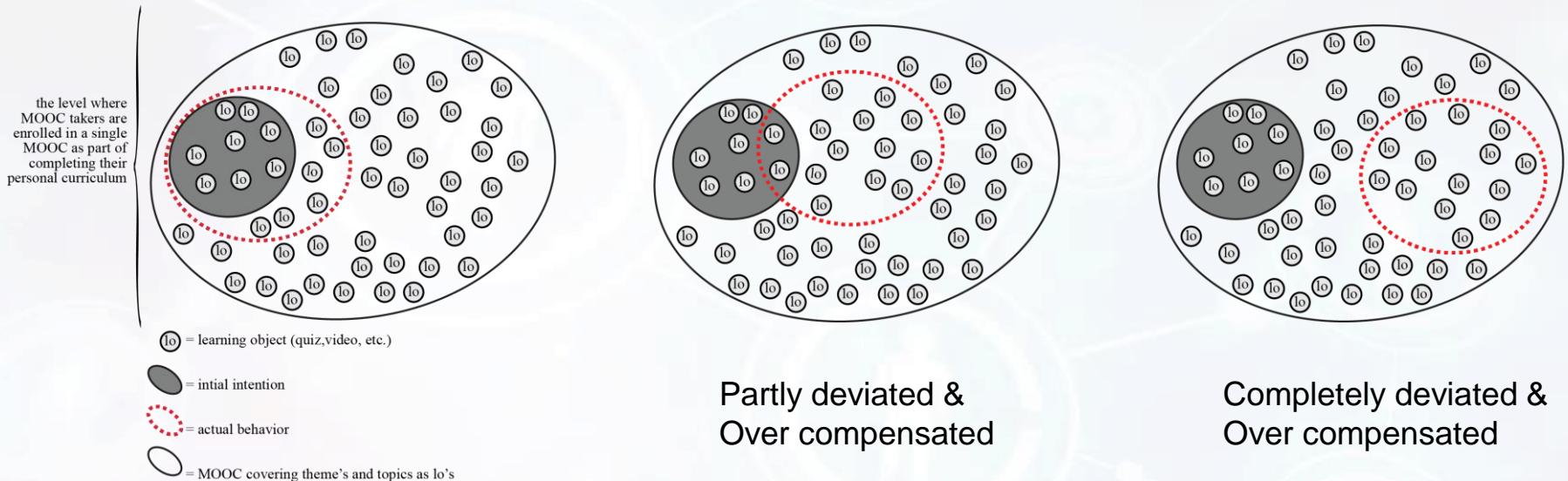
Partly deviated &
Over compensated

More than intended



disinclined actor

Identifying the MOOC taker

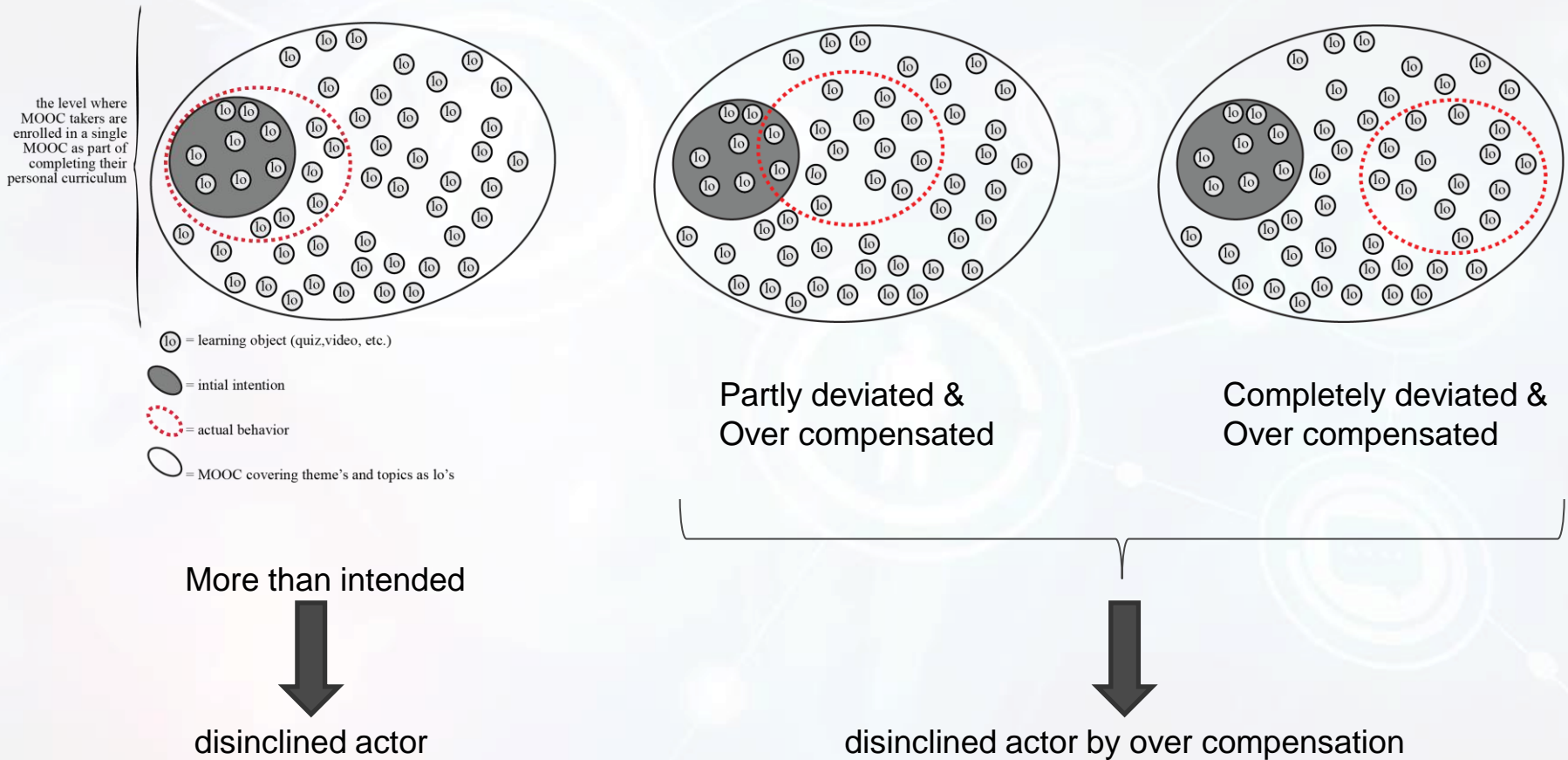


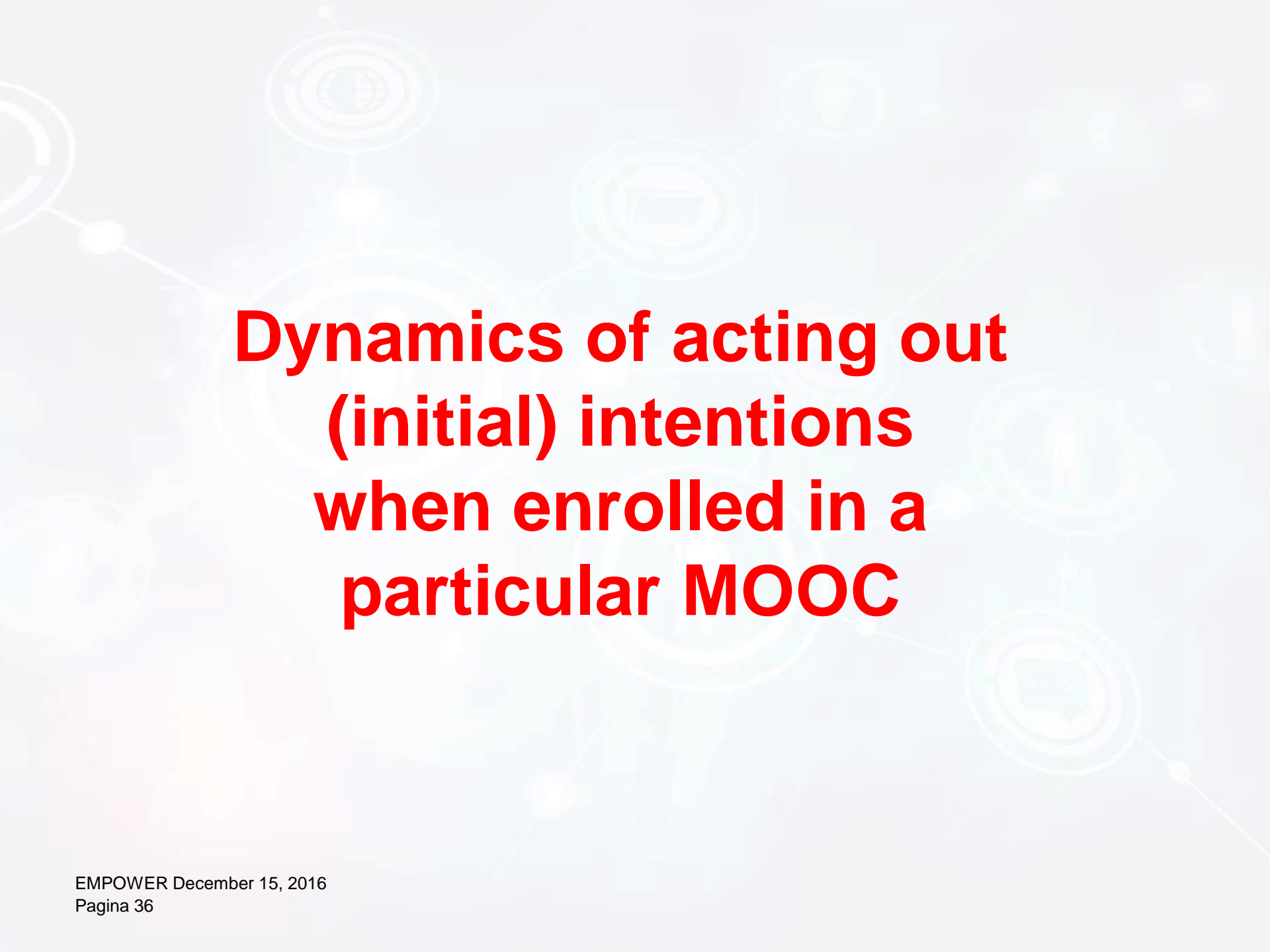
More than intended



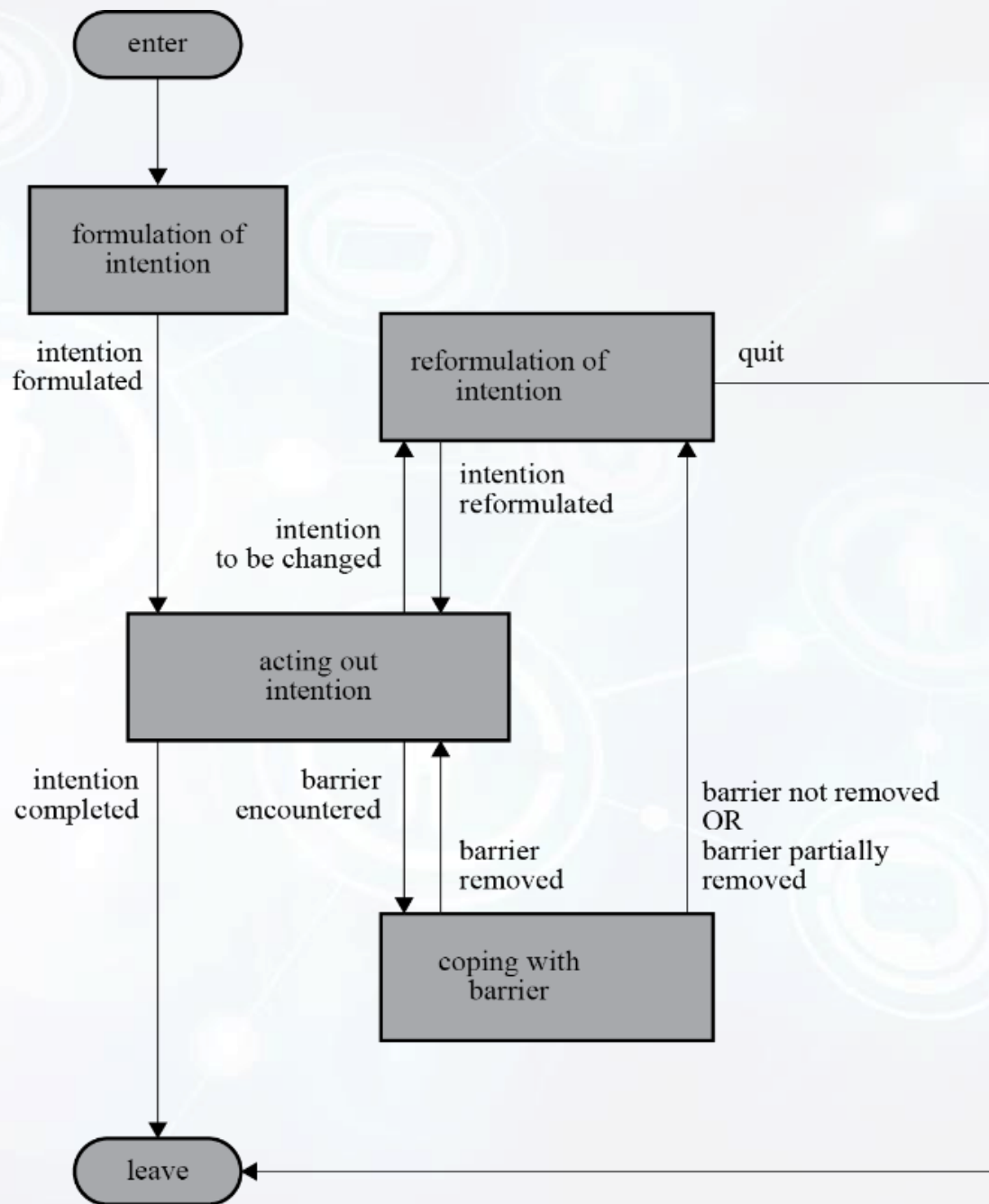
disinclined actor

Identifying the MOOC taker





Dynamics of acting out (initial) intentions when enrolled in a particular MOOC





Conclusions

- Drop-out is only in the eye of the MOOC provider
- Success and failure is only in the eye of the MOOC taker
- MOOCs as a non-formal learning are succesful

